ATOMIC ENERGY newsletter®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
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Dear Sir:

New uranium metal plant of Eldorado Mining & Refining, Ltd., Port Hope, Ontario, Canada, has gone into production, marking completion of program to make Canada self-sustaining in the atomic energy field. Previously, uranium metal used as fuel elements in the Chalk River reactors had been bought in the U. S. Now, much of the metal produced at Port Hope will be fabricated into fuel rods in Canadian plants for ultimate use in both the NRX and NRU reactors at Chalk River. In addition, strong efforts will be made to promote sales abroad. (First work at Port Hope began in mid-1955 when by a new process there metal grade uranium trioxide was produced. Since that time an entirely new and successful process has been developed by Eldorado for conversion of the trioxide to the tetrafluoride; magnesium reduction is then used to produce the uranium metal. Including the cost of the process development, the new plant represents an addition of $1,060,000 to the company's refining facilities.) (Other BUSINESS NEWS, p. 2 this LETTER.)

Georgia Nuclear Laboratories, a new and separate operating branch of Lockheed Aircraft Corp., is an expansion into commercial operations of Lockheed's Georgia division. Design and manufacture of nuclear reactors for industrial, research, and training use and production of small nuclear power units are initial operations planned for the Laboratories, as well as its Government contract work. R. W. Middlewood, former chief engineer of Lockheed's Georgia division, has been named director of the new Laboratories. (Other REACTOR NEWS, p. 5 this LETTER.)

Nuclear Corporation of America is now producing dysprosium metal on a commercial basis, and is offering it in 98-99% purity. The company notes that its good neutron absorption characteristics, its relatively high melting point of 1,400-deg. C., and other properties suggest its use in nuclear reactor control rods. (Other PRODUCTS, PROCESSES, INSTRUMENTS, p. 3 this LETTER.)

Architect-engineer for the 75,000 electrical kw power plant to be built at Hallam, Neb., will be Bechtel Corp., of San Francisco, Calif., under USAEC contract awarded the firm. The plant will be a cooperative arrangement between the USAEC and Consumers Public Power District of Nebraska, with Consumers providing $5,220,000 of the total $29,000,000 cost of the reactor portion of the plant; the USAEC provides the balance. The project will consist of a sodium graphite reactor feeding steam to conventional turbo-generator equipment. Atomics International division of North American Aviation is providing the nuclear reactor facilities, with plant design largely derived from the sodium reactor experiment now operating at Santa Susana, Calif. (Other CONTRACT NEWS, p. 2 this LETTER.)

Under construction at Georgia Institute of Technology is a new radioisotopes and bio-engineering laboratory. A subcritical nuclear assembly and a 1-mev Van de Graaff machine will be some of the facilities available. About 60% of the new building will be used for research in radioisotopes and nuclear physics, and the other 40% for biological research.

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ATOMIC ENERGY CONTRACT NEWS...

BIDS ASKED:- Proposals have been asked by the USAEC from engineering and construction firms for design and construction of a cobalt-60 gamma food irradiator at the projected U. S. Army Ionizing Radiation Center, Sharpe General Depot, Lathrop, Calif. The gamma facility, to be known as the High Intensity Food Irradiator, will be used by the Army's quartermaster corps in its food preservation program, replacing the reactor previously proposed as radiation source. Source of the gamma facility's radiation will be approximately two million curies of cobalt-60. Deadline for bids is May 16; those interested should get in touch with the USAEC's San Francisco operations office, 518 17th St., Oakland 12, Calif.

CONTRACTS LET:- Under terms of contract awarded by the USAEC's New York operations office, Tracerlab, Inc., Richmond, Calif., will sample and analyze fission product fallout resulting from nuclear weapons tests. Specifically, Tracerlab will make radioanalyses of bone, vegetation, and biological samples for strontium-89 & 90, make radiochemical analyses of upper-atmosphere samples; collect and analyze rainfall samples at two separate stations in the U.S.; and analyze Chicago-Midway stratosphere samples. (The contract was let as part of the USAEC's 24-hour surveillance of fallout on the earth's surface; in the meteorological burden up to the stratosphere; and in undersea drifts.)

Fixed price contract in amount of $75,000 has been awarded by the Maritime Administration to Grumman Aircraft Engineering Corp., Bethpage, N.Y., to study the feasibility of hydrofoils for large merchant ships to use the higher speeds of nuclear propulsion. Also awarded by Maritime Administration was fixed price contract of $180,230 to Westinghouse Electric Corp., Pittsburgh, to construct a reactor propulsion system simulator. Initial use of the simulator will be to train reactor operator engineers assigned to the NS Savannah, the nuclear propelled merchant ship being built. (Reactor for the NS Savannah is being built by Babcock & Wilcox Co., at its Lynchburg, Va., facility. Meanwhile, the USAEC has approved as basis for contract negotiation the proposal of General Electric Co. to develop a second core for this reactor. Work on the core is expected to start this month at GE's San Jose, Calif., atomic power equipment department; job will take 18 months to 2 years. And at New York Shipbuilding Corp.'s Camden, N.J. yard, the keel of the NS Savannah will be laid next month, marking first work on the hull.)

On low bid of $1,357,779 among 8 bidders, Farnsworth & Chambers Co., Inc., Houston, Texas, has been awarded contract by the USAEC to construct the Gas Cooled Reactor Experiment (GCRE) at the Commission's national reactor testing station, Idaho Falls, Idaho. Contract calls for construction of the control, reactor and equipment building, utilities, and other service facilities. (The GCRE facility will be an enriched uranium, closed cycle, gas-cooled reactor experiment. Purpose is to develop engineering data and experience for design and construction of military "package" power reactors and small central station nuclear power plants. Test operation of the reactor will be handled by Aerojet-General Corp., Azusa, Calif.)

Sverdrup & Parcel, Inc., St. Louis, has been awarded contract by the USAEC's Argonne National Laboratory to do design work on the 12.5 billion electron-volt zero gradient proton synchrotron to be built at Argonne's main site near Lemont, Ill. Cost of the accelerator and supporting facilities is estimated at $27 million; $1.5 million has been initially made available by the Commission for detailed design work.

ATOMIC ENERGY BUSINESS NEWS...

NEW DIVISION FORMED:- New radiation division has been formed by Varian Associates, Palo Alto, Calif. Various radiation effects will be studied, including irradiation of food.

REACTOR SALE MADE:- General Atomic division of General Dynamics Corp. has sold one of its newly developed research reactors (TRIGA) to the University of Tucson, Arizona. Partial financing will come from a $110,195 grant of the USAEC to the University.

MONITOR DELIVERED BY NAVY CONTRACTOR:- First of a production order for air particle monitors, being developed and produced under a Navy contract by Fairchild Camera & Instrument Corp., has been installed on a nuclear submarine. With new circuitry, the unit has a minimum of lead shielding through use of electronic compensation keeping background gamma radiation from affecting readings.

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NEW PRODUCTS, PROCESSES, INSTRUMENTS...for nuclear lab & plant...

INSTRUMENT NEWS:- Model 123 GM scaler is new budget-priced glow tube scaler for Geiger counting offered by Baird-Atomic, Inc., Cambridge, Mass. Using the firm's Dekatron glow tubes, it has five digit capacity with no mechanical register required. The instrument is said to have resolving time of 150 seconds, and an input sensitivity of ½-volt, negative.

The cobalt-60 radiographic unit produced by Picker X-Ray Corp., White Plains, N.Y., trade-named Cyclops, permits radiographing in a reasonable period of time of heavy steel castings, weldments and other steel products up to 10-inches thick with 1% and 2% radiographic sensitivity, the firm points out. Energy equivalent to 2 to 3 million volt x-rays, as obtained from the Cyclops unit would cost five times as much were it obtained from x-ray facilities, the company notes, in explaining the economy of its unit.

Nuclear instruments shown in London during the 1958 Instruments, Electronics and Automation Exhibition held there last week included an air operated valve to control radioactive water at high pressure and temperature, shown by Alexander Controls, Ltd., Reddicap Hill, Sutton Coldfield, Warwickshire; a device to measure fluid density using a gamma ray source and ionization chamber, shown by Ekco Electronics, Ltd., Southend-on-Sea; and an entirely new hand and clothing monitor, shown by Mullard, Ltd., Mullard House, Torrington Pl., London WC1.

PRODUCT NEWS:- Prices have been cut sharply by the USAEC on cesium-137, promethium-147, cerium-144, strontium-90, and technetium-99; new prices generally are less than 10% of previous prices. Reductions are based on estimated production (to start this Summer) from the Commission's new multicurie fission product pilot plant at Oak Ridge National Laboratory. Depending on quantity bought, new prices per curie range from $1 to $2 for cesium-137; $1.75 to $3.25 for promethium-147; $1 to $2 for cerium-144; and $5 to $10 for strontium-90. Technetium-99 is priced from $80 to $140 per millicurie. Previous curie prices had been $14 for cesium-137; $500 for promethium-147; $1000 for cerium-144; and $500 for strontium-90. Technetium-99 had been $1000 per millicurie. (New prices do not include source encapsulation and packaging charges, etc.)

The radiation inhibitor AET which has been shown in experimental work to afford x-radiation protection to animals, and which is now under test for its efficacy on human subjects, is being offered by the producer Abbott Laboratories, Inc., N. Chicago, Ill. AET is 2-aminoethylisothiouronium bromide hydrobromide.

Improved sensitivity to ionizing radiation is now offered by Eastman Kodak Co. in its Kodak personal monitoring film, Type 1, for cumulative monitoring of occupational exposure to x-rays and gamma rays. Maximum sensitivity is attained for radiation quality of approximately 50 kvcp. Its Type 2 film, with a low-sensitivity emulsion on one side, and a high-sensitivity emulsion on the other side, has a range of assessment extended to emergency levels of exposure. Details are available from the company's Special Sensitized Products Div., Rochester 4, N.Y.

The two tons of natural uranium (aluminum clad ingots) which the USAEC recently shipped from the Savannah River Plant to Italy have been sold by the Italian government to SITEN (Societa Incremento Tecnologia Nucleare) of Milan. The uranium will be used in the reactor now under construction at the General Chemistry Institute of University of Cagliari. While the reactor will be the property of SITEN, it will be operated by the Institute.

An experimental aluminum alloy designated X-8001, developed at Argonne National Laboratory, with improved corrosion resistant properties, is being used to clad the fuel elements in the Argonne low power reactor now being built by Argonne for the USAEC's Army development reactor program. The alloy was developed by the addition of small amounts of nickel to aluminum 1100, a commercial alloy which contains iron. The nickel has imparted better resistance to corrosion from high temperature water than that of commercial aluminums having iron as the primary alloy material. While capabilities of X-8001 do not measure up to such cladding materials as zirconium, it is much cheaper and easier to fabricate and process.

New beryllium metal plant of Bruch Beryllium Co., now in production, is expected to be operating at rated capacity by the end of this month. Brush, the pioneer producer of commercial beryllium metal, holds USAEC contract for delivery of some 500,000-lbs. of the metal over a five year period. Brush is also the only commercial fabricator of this metal, having fabricated over 95% of all the beryllium metal in the world.

tion keeping background gamma radiation from affecting readings.

ATOMIC ENERGY PATENT DIGEST...latest U. S. grants...

ISSUED April 15, 1958 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:- (1) Process for preparation of titanium and zirconium subchlorides. R. C. Wade, inventor. No. 2,830,888 assigned to National Distillers and Chemical Corp., New York, N.Y. (2) Method for controlling the irradiation of polyethylene. K. J. Mackenzie, inventor. No. 2,830,943 assigned to General Electric Co., New York. (3) Apparatus for detecting alpha and beta rays. G. V. Zito, inventor. No. 2,831,121 assigned to Bendix Aviation Corp., Teterboro, N.J.

ISSUED April 15, 1958 to GOVERNMENTAL ORGANIZATIONS:- (1) Uranium recovery process. D. Kaufman, C. S. Abrams, inventors. No. 2,830,871 assigned to USAEC. (2) Recovery of uranium values from phosphate rock. R. F. McCullough, inventor. No. 2,830,872 assigned to USAEC. (3) Fluoride volatility process for the recovery of uranium. J. J. Katz, H. H. Hyman, I. Sheft, inventors. No. 2,830,873 assigned to USAEC. (4) Ion exchange process for the recovery and purification of materials. R. S. Long, R. H. Bailes, inventors. No. 2,830,874 assigned to USAEC. (5) Production of uranium. F. H. Spedding, H. A. Wilhelm, inventors. No. 2,830,894 assigned to USAEC. (6) Uranium alloys. A. U. Seybolt, inventor. No. 2,830,896 assigned to USAEC. (7) Production of uranium tubing. E. C. Creutz, inventor. No. 2,830,921 assigned to USAEC. (8) Process of separating plutonium values by electrodeposition. A. C. Wahl, inventor. No. 2,830,939 assigned to USAEC. (9) Radiation sources. M. H. Brucer, inventor. No. 2,831,122 assigned to USAEC. (10) Time interval measuring device. J. E. Gross, inventor. No. 2,831,162 assigned to USAEC. (11) Neutronic reactor. E. P. Wigner, A. M. Weinberg, G. J. Young, inventors. No. 2,830,944 assigned to USAEC.

ISSUED April 22, 1958 to GOVERNMENTAL ORGANIZATIONS:- (1) Separating protoactinium with manganese dioxide. G. T. Seaborg, J. W. Gofman, R. W. Stoughton, inventors. No. 2,831,750 assigned to USAEC. (2) Neutronic reactor, E. P. Wigner, inventor. No. 2,831,806 assigned to USAEC. (3) Neutronic reactor. R. J. McGarry, inventor. No. 2,831,807 assigned to USAEC. (4) Electromagnetic apparatus for moving a rod. J. N. Young, inventor. No. 2,831,990 assigned to USAEC. (5) Ion source. E. F. Martina, inventor. No. 2,831,996 assigned to USAEC. (6) Time calibrated oscilloscope sweep. H. M. Owren, B. M. Johnson, V. L. Smith, inventors. No. 2,832,002 assigned to USAEC.

NOTES:- Preliminary German patent DAS 1,023,748 covers improvements in carbonate extraction of uranium-phosphate minerals. Process, developed by Deutsche Gold-und-Silber-Scheideanstalt, of Frankfort, Germany, involves formation of a complex magnesium-ammonium phosphate to handle silica and colloidal iron hydroxide impurities, to yield a phosphate-free uranium concentrate.

German patent DBP 1,010,203, recently issued to Prof. F. A. Henglein of Karlsruhe Technical University, covers a nuclear reactor using principles of rotary kiln construction. The patent teaches the use of finely powdered graphite for both moderator and coolant, with heat being removed from a fixed core to the reactor walls. Activity of the reactor is regulated by varying the quantity of powdered graphite in the reactor.

NEW BOOKS & OTHER PUBLICATIONS...on nuclear subjects...

Radioisotopes in Scientific Research. R. C. Extermann, editor. Four volumes of the proceedings of the first UNESCO international conference held September, 1957, in Paris. --Pergamon Press, Ltd., 122 E. 55th St., New York 22. ($60 per set; $22.50 per volume.)

Bone and Radiostrontium, by A. Engstrom, The Caroline Institute, Sweden, and R. Bjornerstedt, C. J. Clemedson, and A. Nelson, of the Research Institute of National Defense, Sweden. An examination of this serious problem. 139 pages. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16. ($9.25)

MANUFACTURERS' LITERATURE:- Catalog A-2 of Baird-Atomic, Inc., Cambridge, Mass., describes that firm's new line of atomic instrument systems..... New booklet on zirconium is available from Norton Co., Worcester 6, Mass., covering that firm's zirconium and other electro-chemicals which it produces..... A descriptive pamphlet and user discussion of the firm's 256-channel pulse height analyzer, Model 20609 is available from Radiation Counter Laboratories, Inc., Skokie, Ill. ..... Control rod drives for nuclear reactors are covered in new booklet issued by Alco Products, Inc., New York 17, N.Y.

metal in the world.

ATOMIC ENERGY POWER PLANT NEWS...

FEDERAL FINANCIAL ASSISTANCE FOR PROPOSED NUCLEAR POWER PLANT:- The USAEC is now asking Congress (in its new authorization bill) for specific authorization to assist the power reactor project of Pennsylvania Power & Light Co. - Westinghouse Electric Corp. The USAEC financial assistance would be a cooperative arrangement with this project which proposes to build a nuclear power station using an acqueous homogeneous reactor; site would be in PP&L's service area in eastern Pennsylvania. Total cost of the project has been estimated at about $107 million. (The USAEC had previously withdrawn a PP&L-WE arrangement, after Joint Congressional Committee on Atomic Energy, and Comptroller General, had objected to original terms. New terms will be revealed when USAEC authorization bill is made public.)

NUCLEAR POWER USED EXCLUSIVELY AT GENERATING STATION:- Firm scheduling of nuclear power at the new Shippingport, Pa., plant of Duquesne Light Co., enabled the system to handle its load normally when one of its larger conventional generating units was shut down recently, the firm has reported. Duquesne said the nuclear plant has proved reliable, with operation progressing satisfactorily.

CONSTRUCTION UNDERWAY ON LARGE BRITISH NUCLEAR POWER STATION: Rapid progress is reported on construction of Britain's Hinkley Point, Somerset, nuclear power station. With a planned net electrical output of 500,000 kw, it will be the largest in the world, and the first to provide electricity at present U.K. generating costs of 0.65 pence per unit. The atomic power group comprising English Electric-Babcock & Wilcox-Taylor Woodrow is handling the job for the Central Electricity Generating Board, with operation scheduled for 1962. Reactors will use natural uranium and will be of the gas-cooled, graphite-moderated type. The circulating water system which will provide sea water for cooling purposes at the rate of 55 million gph, is one of the factors enabling an efficient and economic operation.

ATOMIC ENERGY FINANCIAL NEWS...

FUND SHOWS INCREASE IN NET ASSET VALUES:- Energy Fund, open end investment company holding shares of companies in the energy field, including the nuclear, had net asset value per share of $135.89 on Mar. 31, 1958, up from $128.18 on Dec. 31, 1957. This was an increase of some 6% which the Fund recorded for the quarter. In the same period total net assets rose 8.9% to a total of $3,921,716. During the quarter, the Fund sold 2000 Beckman Instruments, and 1700 Safety Industries. Acquisitions included 2500 Commonwealth Edison, 1000 Cutler-Hammer, 1000 General Dynamics, 1000 Litton Industries, 1000 Minneapolis-Honeywell, 50 Philips (1000 florin shares) and 2000 Signal Oil & Gas.

CHANGES IN STOCKHOLDINGS SHOWN:- Changes in stockholdings recently made by officers, directors and large stockholders of firms in the nuclear field included purchase by Engelhard Industries, Inc., of 250,200 class A shares of Nuclear Corp. of America, increasing direct holdings to 1,563,000 shares. Kennard A. Morganstern, vice-president Nuclear Corp., sold 2,000 class A shares, decreasing holdings to 22,400 shares..... In another transaction, George Rowe, Jr., vice president Stanrock Uranium Mines, Ltd., sold 2,000 shares decreasing holdings to 7,612 shares..... A sale of 5,000 common shares of General Dynamics Corp. was made by Frank Pace, Jr., president, reducing his direct ownership of common shares to 54,780.

GOVERNMENT-GUARANTEED LOAN OBTAINED BY RADIATION INSTRUMENT MANUFACTURER:- A "V" loan of some $270,000 has now been obtained by Universal Transistor Products Corp., Westbury, L.I., following decision of Comptroller General of the U.S. that civil defense contracts come under the scope of the defense production act of 1950. Previous to the decision, the General Services Administration could not guarantee loans against such contracts. The firm is now manufacturing substantial quantities of radiation detection instruments against contracts which it holds from the General Services Administration. It has received contracts totaling $1,411,670 in the past year for a variety of radiation monitoring devices, and recently completed shipment of 23,886 dosimeter chargers; shipments are now starting on 35,721 radiation monitors.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

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